# Save Medina Lake

*committee review with*

## Texas Commission on Environmental Quality

May 12, 2015

# OBJECTIVES

1. Review data analysis completed by the Save Medina Lake (SML) committee with the TCEQ and receive input and council.

2. Discuss options to improve Medina Lake's management for the future.

3. Agree to next steps

# AGENDA

Who is Save Medina Lake?

Review data analysis indicating improper management of Medina Lake and Diversion Lake

Review potential solutions

Discuss and agree to next steps

*SETTING THE STAGE,*

*SAVE MEDINA LAKE IS <u>NOT</u> CHALLENGING BMA'S WATER RIGHTS AUTHORIZING 20,144 ACRE-FEET/YEAR FOR MUNICIPAL PURPOSES AND 45,856/YEAR ACRE-FEET FOR IRRIGATION PURPOSES.*

# WHO IS SAVE MEDINA LAKE?

2 years ago, a group of concerned citizens formed the Save Medina Lake committee (SML) as part of Medina Lake Conservation Society.

The fundamental question of the committee was:

*Why is Medina Lake dry while all comparable lakes in Central Texas are not, despite the drought?*

The committee has spent the last 18 months working with and learning from water experts, partnering with other water conservation groups, and performing research & data analysis with the goal of answering this question.
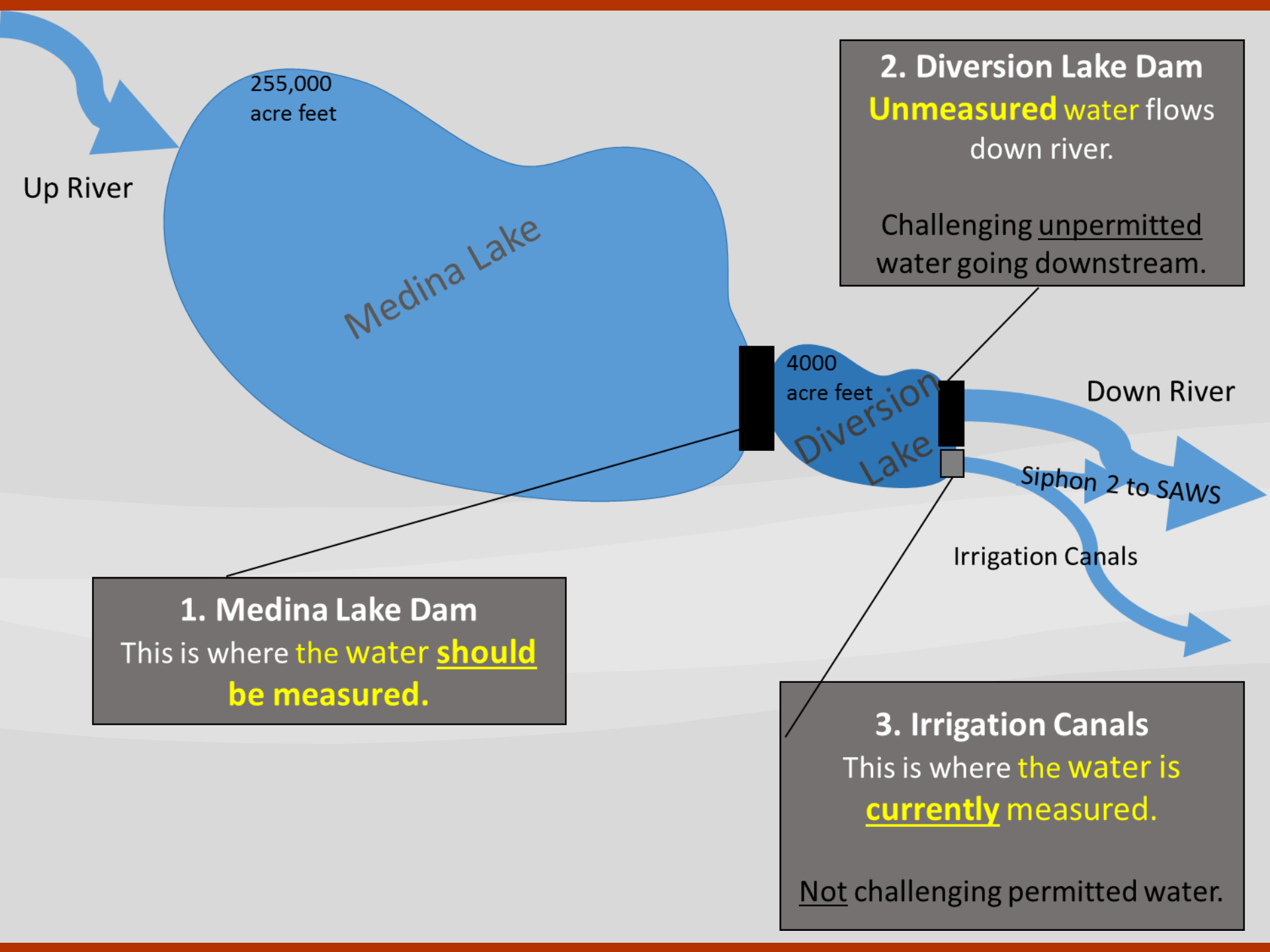
# SAVE MEDINA LAKE CONCLUSIONS

➢ The drought is the reason why the lake is not full

➢ Low rain & inflow volumes are why the lake has not recovered

➢ However, data analysis strongly suggests the reason **why the lake is dry, not just low, is because the valve(s) at Medina Lake were improperly managed and left open, effectively draining the lake** from 100% in 2007 to 25% in 2009 to 6% April 2013.

<u>**The lake now is at 4% full**</u>

All the visual observations of the Medina Lake dam as well as the river below that the committee has gathered during this period confirm the valves were at least partially left open.

According to SML's data analysis, the Medina Lake Dam gate valve(s) were left open until April 2013 releasing a significant amount of water each year.

Medina Lake Dam gate valves are **unmetered**.  This sends unmetered/**unpermitted** Medina Lake water to Diversion Lake and down river.

There is no water conservation level for the lake allowing the lake to be drained dry.

BMA is not required to file or have an operating plan with the state.

The current drought contingency plan (see attached) fails to consider the fact that the water released from Medina Lake dam is not measured.

# HOW MUCH WATER IS RELEASED FROM MEDINA LAKE DAM VALVES?

| Theoritical Outflow Volume Medina Dam | | | | | | |
|---|---|---|---|---|---|---|
| Actual lake elevation and volume | | | | Both Valves open | | |
| Date | Lake Elevation | Lake Volume % | | 100% | 50% | 25% |
| **15-Nov-07** | **1,064** | **100%** | | | | |
| 15-May-08 | 1,057 | 85% | | 600,900 | 300,450 | 150,225 |
| 15-Nov-08 | 1,045 | 60% | | 570,130 | 285,065 | 142,533 |
| 15-May-09 | 1,034 | 55% | | 285,065 | 264,990 | 132,495 |
| **14-Nov-09** | **1,016** | **24%** | | 142,533 | 239,075 | 119,538 |
| Acre Feet loss from 11/15/2007 - 11/14/2009 | | | | 1,598,627 | 1,089,580 | 544,790 |

- No records exist on how much water is actually released.

- SML's analysis indicates in this range over the 2 year period of 2007 - 2009

# MEDINA LAKE DAM SOLUTIONS

**Until corrective actions are taken, <u>keep Medina Lake dam valves closed.</u>**

Install flow meters on Medina Lake dam valves to determine amount of water released.

Keep dam valves closed during normal rain fall years. Outflows from surrounding streams will maintain a healthy river flow.

During low rain fall/drought years, operate valves to only release permitted water.

Develop an effective drought contingency plan that establishes a water conservation level and does not allow draining the lake dry.

Require BMA to develop operating procedures and file with the state.

# 2. DIVERSION LAKE DAM ISSUES

As a result of Medina Lake valves left open, the normal operations of Diversion Lake is to force water flow over the top of the dam. This sends a significant amount of **unmetered/unpermitted** water down river and to *SAWS*.

Diversion Dam valves are inoperable and **unmetered**. When open, these valves provide unpermitted water down river and to *SAWS*.



Photo taken 2010 of Diversion Dam when Medina Lake was not over it's spillway.
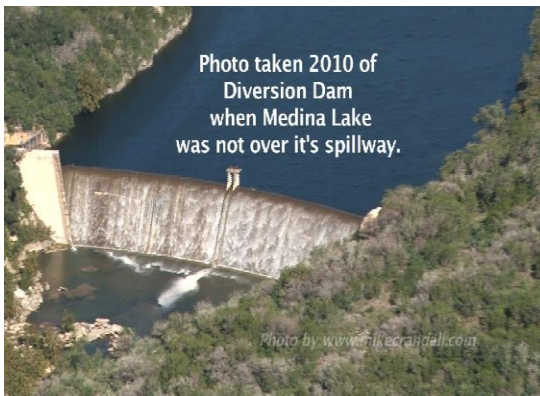
**Water overtopping Diversion Dam on 3 different dates. This should not be normal operations.**

# DIVERSION LAKE DAM SOLUTIONS

Operate Diversion Lake so that water does not overtop the dam.

Install flow meters on Diversion dam valves to determine amount of water released.

Repair Diversion dam valves.

Keep dam valves closed during normal rain fall years. Outflows from surrounding streams and canyon walls will maintain a healthy river flow.

During low rain fall/drought years, operate valves to only release water to maintain a healthy river flow.

# 3. IRRIGATION CANALS ISSUES

The Canal gates appear to be inoperable and therefore do not provide water control into the canal.

The waste gate on Siphon2 is routinely left open and sends **unmetered/<span style="color:red">unpermitted</span>** water downriver and to SAWS.  When shut, the gate continues to leak water.

The canal system is unmaintained and inefficient.  Many studies indicate 75% or greater of the water flowing thru the system is loss due to seepage, evaporation, and waste.

Several canal gates are missing fish screens and those screens that do exists appear to be broken. This sends fish out of Diversion Lake into the canal to die.

**No fish screen on 1, 3, 5 gates.  Screen on 2 & 4 gates appear to be inoperable.**

**A significant amount of water flowing thru Canal Waste gate.**

# IRRIGATION CANALS SOLUTIONS

Improve the efficiency of the distribution system by implementing solutions identified by experts in the field.  Several solutions from one such expert, Douglas Hearn, P.E., R.P.L.S.NATURAL RESOURCE CONSERVATION COMMISSION, are as follows:

1.  Line the main canal from the end of the existing concrete lining to Pearson Lake and from Pearson Lake to the Bexar County Line.

2.  Construct check structures at regular intervals along the canal to create storage in the system that could be remotely controlled to release & store water as needed.

3.  Structures along the canals should be modified to capture storm water.

4.  Laterals in areas with sandy soils should be piped.

# Next Steps